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# PATENT SPECIFICATION

DRAWINGS ATTACHED

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## COMPLETE SPECIFICATION

### Key Operable Locks

5 We, EATON YALE AND TOWNE INC., a corporation organised and existing under the laws of the State of Ohio, United States of America, of the city of Cleveland, Cuhjahoga County, State of Ohio, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention relates to key operable pin tumbler-type locks of the kind comprising a body in which is defined a bore, and a cylinder mounted in the bore for angular movement therein, the body and cylinder having a plurality of bores which are aligned when the key is to be inserted or withdrawn and which incorporates spring-loaded pins for preventing angular movement of the cylinder within the body until an appropriate key is inserted.

The object of the invention is to improve the security of such locks.

In the accompanying drawings:—

25 Figure 1 is a sectional plan view of one example of a pin tumbler lock incorporating one example of the invention.

Figure 2 is a section on the line 2—2 of Figure 1

30 Figure 3 is a sectional side elevation of the locks shown in Figure 1 but incorporating another example of the invention and

Figure 4 is a section similar to Figure 2 showing a further example of the invention.

35 Referring to the drawings there is provided a body 10 in which is a cylindrical bore 11 accommodating a cylinder 12, the bore at the outer end of the body, which is exposed in use, being enlarged to accommodate a complementary flange 13 on the cylinder. In the cylinder is a longitudinal slot 14 for the reception of a key. Moreover, there is also formed in the cylinder a plurality of (e.g. five) axially spaced and parallel radial bores 15 which are aligned respectively with complementary bores

16 in the body 10 when the key is withdrawn.

In the bores 16 in the body are a plurality of spring-loaded pins 17 respectively whilst a further plurality of pins 18 are located in the bores 15 in the cylinder. The arrangement is such that when no key is in the cylinder the pins 17 in the body will project into the bores in the cylinder and thereby prevent the cylinder from being moved angularly in the body. However, when an appropriate key is inserted in the cylinder the pins 18 in the latter will be moved to positions in which their outer ends are flush with the periphery of the cylinder, thereby pushing the pins in the body into their respective bores. In this position the cylinder can be moved angularly by the key.

The lock thus far described is well known, and in applying the invention to such a lock a pair of hardened steel cylindrical plugs 19 are mounted in additional bores in the cylinder extending parallel to the bores accommodating the pins. The pair of plugs are situated at opposite sides of a plane including the axes of the pins 18 and are spaced apart by a distance preferably less than the diameter of the pins so that a drill of a diameter equal to, or larger than, the pins cannot pass between them.

75 In the case of a five-pin-tumbler lock as described the plugs may be disposed between the second and third pin from the outer end of the lock so as to protect the three innermost pins only.

80 A pair of further hardened steel plugs 20 are similarly located and disposed within the body to protect the spring-loaded pins therein. Preferably as shown in Figure 3, an annular hardened steel ring 21 is interposed between the flange 13 of the cylinder 12 and the shoulder in the bore of the body 10 to prevent or hinder drilling along a line of contact of the cylinder and body.

85 Alternatively, as shown in Figure 4 the plugs 19 in the cylinder may be replaced by a plu-

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ality of hardened steel balls 22 located in a diametrical bore or bores in the cylinder. Moreover, as shown in Figure 3, all or some of the pins may be formed from hardened steel, or may be accommodated in hardened steel liners 23 in their respective bores.

By any suitable combinations of the above means the pins can be protected from a drill introduced in to the lock from its outer end, and if the hardened steel does not break or wholly obstruct the drill, it will increase the drilling time considerably to improve the security of the lock.

WHAT WE CLAIM IS:—

1. A lock of the kind specified in which there is provided within the cylinder a further bore in which is mounted a hardened steel member, the further bore being in a position such that the hardened steel member will protect some or all of the pins from the action of a drill applied to the exposed end of the lock.

2. A lock as claimed in claim 1 in which a pair of said further bores are provided and which are situated on opposite sides respectively of a plane including the axes of the pins, said further bores being spaced apart by a distance less than the diameter of the pins, said further bores each containing a hardened steel plug.

3. A lock as claimed in claim 2 in which some or all of the pins in the body are accommodated within hardened steel liners.

4. A lock as claimed in claim 2 in which extra bores are formed in the body in the same relative positions to the pins as said further bores, said extra bores also each containing a hardened steel plug.

5. A lock as claimed in claim 1 in which the member is in the form of a plurality of hardened steel balls, the bore being diametrically disposed in the cylinder.

6. A lock as claimed in any one of Claims 1—5 inclusive in which an annular hardened steel ring is interposed between a flange formed at the outer end of the cylinder and a complementary shoulder in the bore in the body.

7. A lock of the kind specified comprising the combination and arrangement of parts substantially as described with reference to Figures 1 and 2 of the accompanying drawings.

8. A lock of the kind specified comprising the combination and arrangement of parts substantially as described with reference to Figure 3 of the accompanying drawings.

9. A lock of the kind specified comprising the combination and arrangement of parts substantially as described with reference to Figure 4 of the accompanying drawings.

MARKS & CLERK,  
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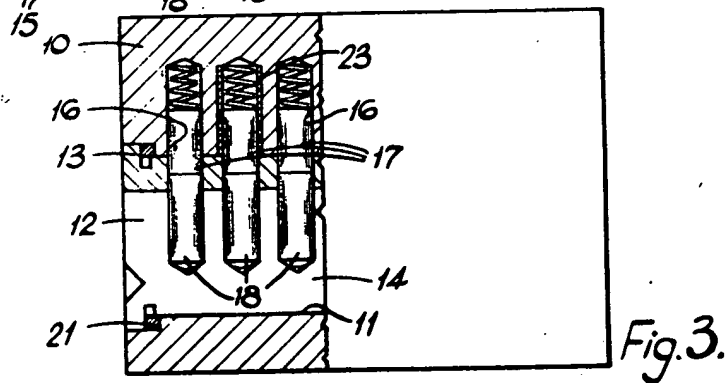
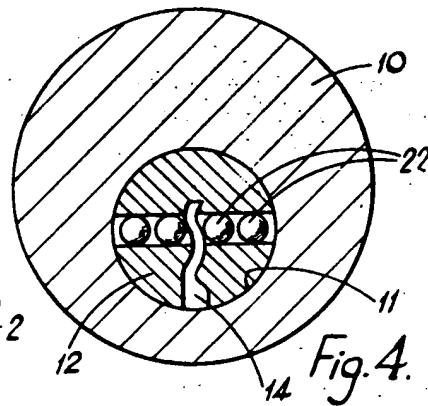
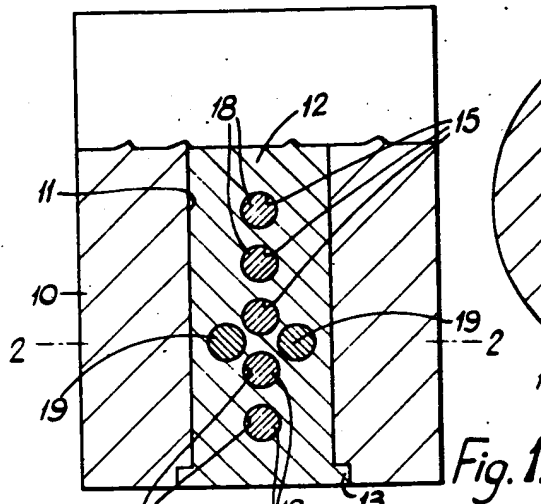
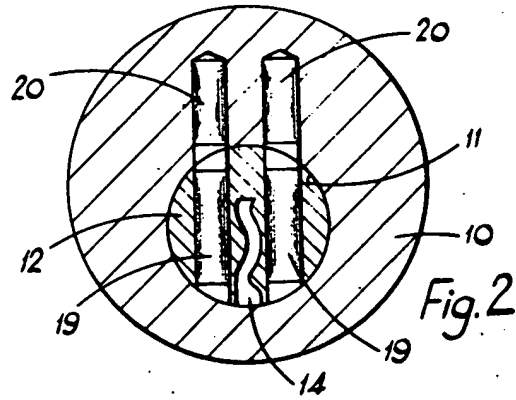
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COMPLETE SPECIFICATION

1 SHEET

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